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Food Price Levels and Volatility: Sources, Impact and Implications

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Abstract Food inflation in India for the past few years has been at an historic high. Higher food prices have especially hurt those who spend most of their income on food and have not necessarily been helpful to smallholder farmers in terms of increased supply response. The volatility of food prices at the wholesale and retail levels has also increased, and this creates uncertainties for consumers and producers that need to be managed. This article reviews some of the sources of food price increases and volatility (especially over the period 2008–10 when inflation was high) and draws out implications for Indian citizens.

1 Food price trends: India

Over a period of two years beginning December 2007, the annualised point-to-point inflation in the prices of food articles in India, as measured by the Wholesale Price Index (WPI) rose from a temporal low to a peak in December 2009 (Figure 1). Through much of this period foodgrain prices too were rising (Figure 2) as were the prices of other food articles such as fruit and vegetables, eggs, meat, fish and milk. Further, for almost a year from December 2009, the inflation rate, though declining, remained in the two-digit range. Given the fact that India is a country in which a substantial proportion of the population consists of individuals with insecure employment, earning incomes that are not indexed to inflation, and with no access to social security, the government was under pressure to rein in inflation and mitigate its adverse effects on sections at the margins of subsistence. However, despite some effort on its part and periodic assurances that inflation would abate, the problem persisted till quite recently.

This persistence took the government by surprise partly because over the first few years of the last decade, foodgrain prices were relatively flat, with inflation not exceeding 5 per cent till the middle of 2005. It was only subsequently that the inflation rate rose above 5 per cent on an annualised month-on-month basis, and touched double-digit levels for a brief period between September 2006 and January 2007. In the months that followed, the rate of inflation fell from its December peak of 13.1 per cent to less than 5 per cent in September 2007. But this declining trend reversed itself in March 2008, and food price inflation rose to 10.8 per cent in December 2008 and remained at high double-digit levels till June 2010. India seemed to have returned to the situation that prevailed in the second half of the 1990s, which was characterised by high inflation and substantial volatility in food prices (Figures 1 and 2). Yet the experience between 2001 and 2007 had convinced the government that inflation was at most an occasional disturbance that was in substantial measure self-correcting.

For the consumer, inflation was more damaging than indicated by trends in the WPI, which most often understated the actual inflation experienced at the retail level. Figures collated by the Price Monitoring Cell of the Department of Consumer Affairs establish that in the case of a few commodities there is a significant difference between inflation as measured by retail prices (collected from and averaged across 18 reporting centres nationwide) and the wholesale price index. Table 1 reports the retail price increase in the major regions for rice, *atta* (wheat flour) and sugar at the end of January 2010, which was just after inflation as measured by the WPI had peaked. It is evident that the price increase had been alarming especially over the previous two years, with rice prices increasing by nearly half in northern cities and

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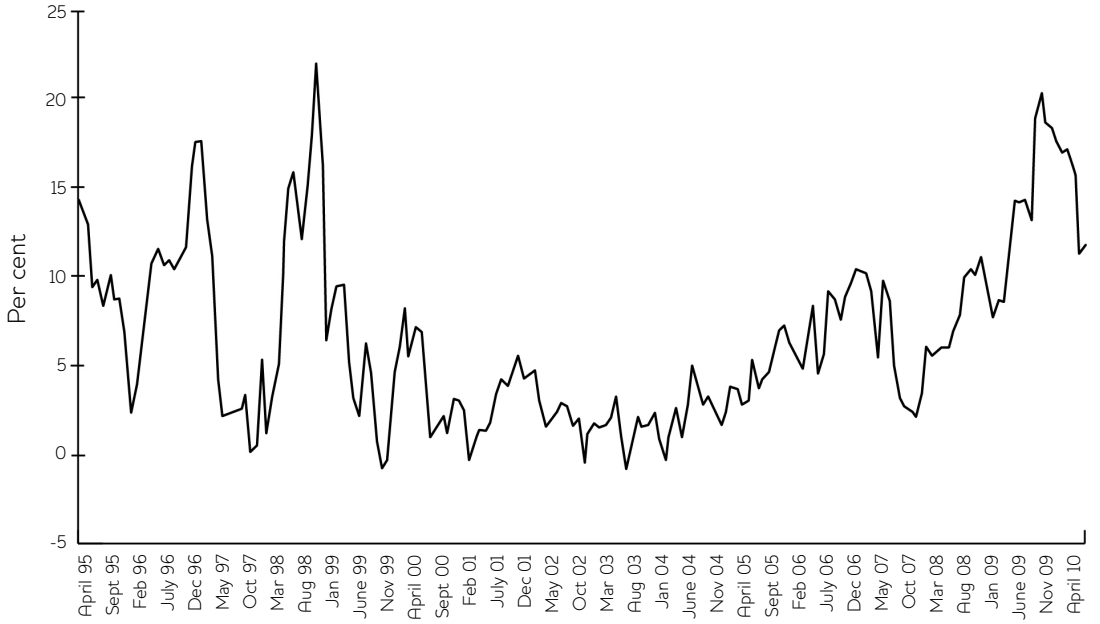
Figure 1 **Month-on-month annual rate of inflation in prices of food articles (index with base 1993–94 = 100)**



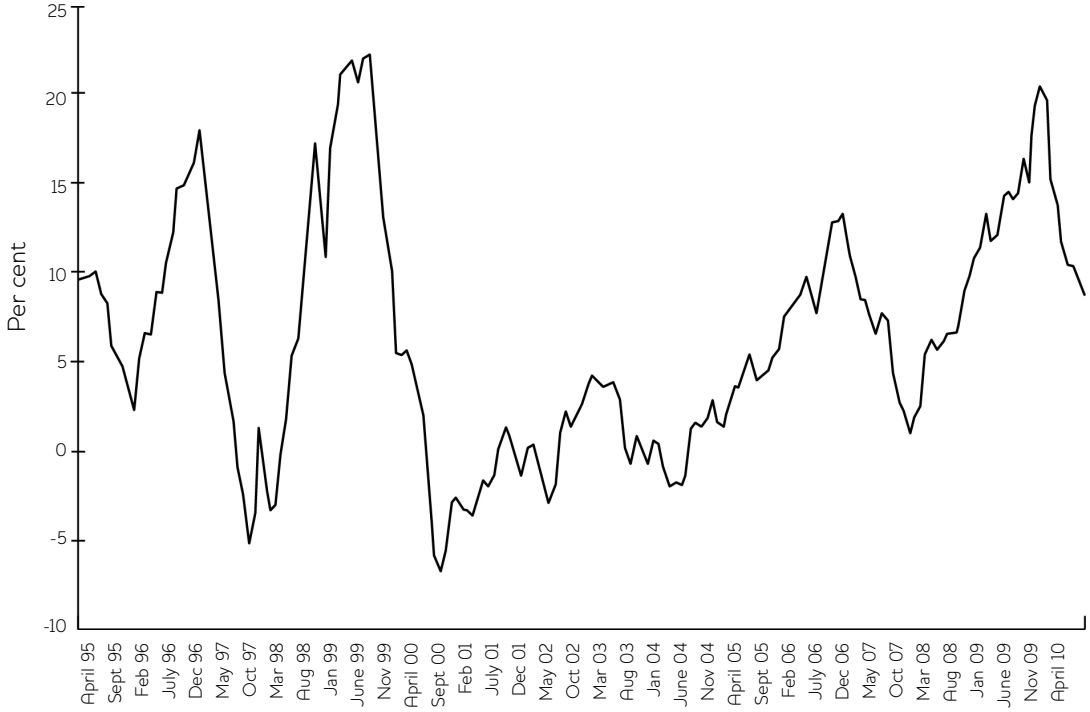
Source Office of Economic Adviser, Ministry of Commerce and Industry, http://eaindustry.nic.in/Download_Data_9394.html (accessed 1 April 2012).

Table 1 **Retail prices in major cities/towns, by zone Jan 2008–Jan 2010**

	Average retail price on 27.01.10 (Rs)	Increase over 1 year (%)	Increase over 2 years (%)
Rice			
North Zone	19.92	11.94	48.45
West Zone	19.33	9.78	29.37
East Zone	16.19	10.31	16.30
South Zone	22.25	32.84	58.93
Atta			
North Zone	17.00	24.90	24.90
West Zone	17.17	15.73	21.85
East Zone	17.50	19.32	22.09
South Zone	20.38	5.16	13.19
Sugar			
North Zone	36.17	64.08	156.05
West Zone	34.61	66.58	122.50
East Zone	37.88	74.64	118.77
South Zone	32.19	61.44	109.35

Source Ministry of Food and Civil Supplies, Food Price Monitoring System.

Figure 2 **Month-on-monthannual rate of inflation in foodgrain prices (index with base 1993–94 = 100)**



Source Office of Economic Adviser, Ministry of Commerce and Industry, at http://eaindustry.nic.in/Download_Data_9394.html (accessed 1 April 2012).

more than half in southern cities. *Atta* prices had on average increased by around one-fifth from their level of two years previously. The sharpest increase was in sugar prices, which had more than doubled across the country. Other food items, ranging from pulses to milk and vegetables, had also shown dramatic increases, especially in the previous year.

2 Explaining the moderation in volatility and levels – and the reversal

There are many reasons why food prices in developing countries tend on average to be more upwardly flexible and more volatile than the prices of other commodities. To start with, unlike in the manufacturing sector, supply from the agricultural sector, which directly or indirectly contributes much of the food consumed, tends to be less responsive in the short run to increases in demand (at any price level). Secondly, agricultural production in most developing countries is dependent on variable natural conditions such as rainfall. A bad monsoon can limit supply and result in demand–supply imbalances that fuel inflation. The combination of inelastic supply and volatile production also makes the market for agricultural commodities, including for food, prone to speculation that worsens any inflationary tendency.

Finally, many developing countries are characterised by a chronic 'disproportionality' in the rates of growth of the agricultural and non-agricultural sectors, with the former registering lower growth rates than the latter (Chakravarty 1993). Periodically, such disproportionality results in the demand for food from the non-agricultural sector exceeding market supplies. This makes for a long-term tendency for upward buoyancy in agricultural prices, including food prices.

A number of factors served to counteract the effects of these potential contributors to food inflation during the years 2001–07. One was the deflationary effect of fiscal reform. A component of such reform in recent years has been an effort to curb the deficit on the government's budget financed by borrowing. This often involves a cut in expenditure that contracts the direct demand of the government for the goods and services it consumes or invests in. It also results in a deceleration in the employment and incomes

offered by the government, which indirectly constrains growth in demand.

It would be asked why this tendency did not dampen inflation to the same degree in the 1990s, since reforms began early in that decade. The reason is that the policy of curtailing expenditures and the deficit was implemented with a lag, and despite its stated objective, the government in India could not rein in the deficit during much of the 1990s. There were only four years in the period after 1990/91, starting in 2004/05 in which the fiscal deficit at the centre was below 4 per cent of GDP (Government of India 2012: 42, Table 4.3). Thus, it was only later that this objective of reform began to be implemented successfully with attendant consequences.

Another factor contributing to the dampening of demand growth and explaining low inflation was the change in the pattern of growth itself. There are reasons to believe that the pattern of growth under an open economic regime is such that the responsiveness of employment growth to the growth in output tends to decline Patnaik (2006). The combination of high output growth and low employment growth is a feature characterising both India and China during the years when they opened their economies to trade and investment. With trade and investment liberalisation, new products and processes introduced in the developed countries very quickly find their way to the developing countries. On the other hand, technological progress in the form of new products and processes in the developed countries is inevitably associated with an increase in labour productivity. Hence, after liberalisation, labour productivity growth in the developing countries is exogenously given and tends to be higher than prior to trade liberalisation, leading to a growing divergence between output and employment growth. Thus, the demand for food associated with a given level of growth would be lower than would have been the case otherwise.

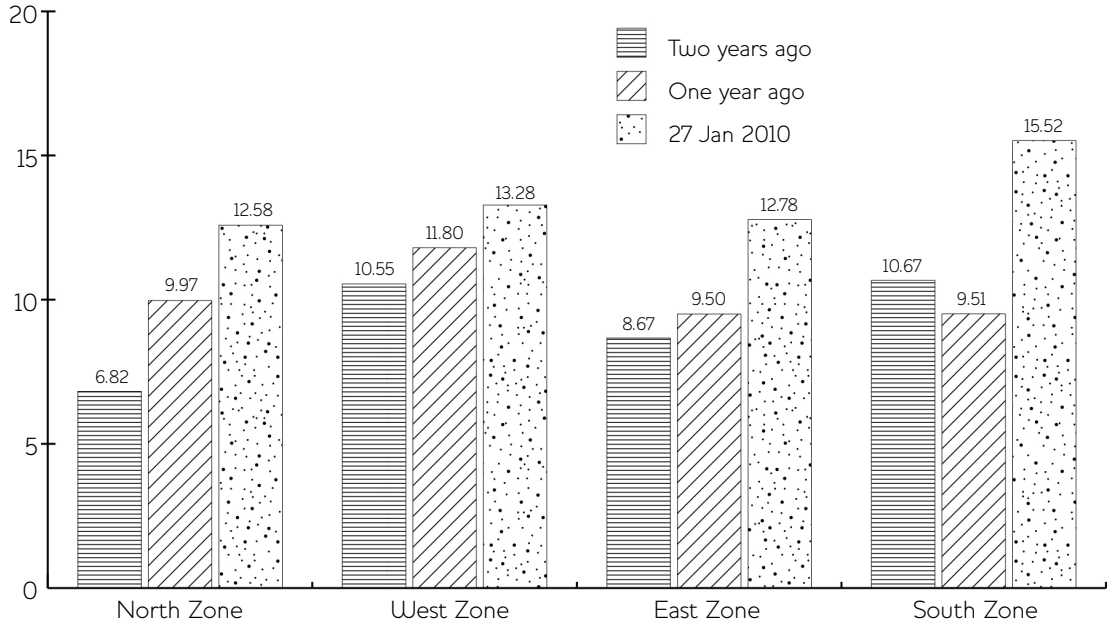
Needless to say, this argument is not a complete explanation of this divergence in the case of India because of the dominance of services in total growth. However, the lack of correspondence between output and employment growth is true here as well. Tertiary sector employment in 2004/05 amounted to only 25 per cent of the workforce despite the fact that close to 50 per cent of GDP came from this sector. Moreover, between 1999/2000 and 2004/05, employment in the tertiary sector increased by only 22 per cent, whereas GDP at constant prices contributed by the service sector expanded by 44 per cent.[1]

When these features of the pattern of growth are recognised and their consequences added to the effects of a 'deflationary' fiscal stance, it is possible to understand why the tendency towards disproportionality that spurs inflation tends to get muted.

But that raises the question why food prices surged in 2008 and why inflation lasted for a considerable period. It must be noted here that it was after 2003/04 that India moved from a 6 per cent per annum GDP growth trajectory, to a growth rate in the 8–9 per cent range. This shift to a higher growth trajectory must have had implications for the direct and indirect demand for food, providing the basis for a demand–supply imbalance. That this may have been the case is suggested by the fact that the period of relatively high food inflation came after a period of high GDP growth. The surge in growth rates was led by a boom in credit-financed private investment in housing and an expansion of credit-financed private purchases of automobiles and durables. This substitution of credit-financed private expenditure for credit-financed public expenditure allowed growth to accelerate despite fiscal conservatism, resulting in the emergence of demand–supply imbalances and resurgence of inflation.

Further, this was a period when agricultural performance was indifferent or poor. As some economists have noted, in the period of reforms, when the Indian economy had ostensibly turned dynamic as suggested by the GDP growth figures, agriculture continued to be neglected, resulting in a silent agricultural crisis. That neglect had many components. Public investment in agriculture has been in long-term decline. The extension system aimed at reaching new agricultural technologies and providing information on better farming practices to India's agriculturists has either been dismantled or allowed to degenerate. Agricultural research, which served India well during the Green Revolution years, has been given inadequate attention and resources. And a 'reform'-induced combination of trade liberalisation and domestic deregulation has raised costs while inadequately

Figure 3 **Retail margins for rice (%)**



Source Government of India, Ministry of Consumer Affairs, Food and Public Distribution, Price Monitoring Cell, http://fcainfoweb.nic.in/pms/Average1_web.aspx (accessed 29 May 2012).

compensating farmers with remunerative prices, damaging the viability of crop production and increasing farmer exposure to income volatility.

Not surprisingly, the country is experiencing a deep-seated food crisis. The per capita availability of food in a country where much of the population is below the level of nutritional adequacy has been low and declining. This has not proved to be much of a problem because low incomes and purchasing power among a significant section of the population kept demand in check as well. But the indirect demand for grain on the part of the well-to-do has increased with higher growth rates. Hence, with low levels of per capita availability persisting, food prices finally turned buoyant.

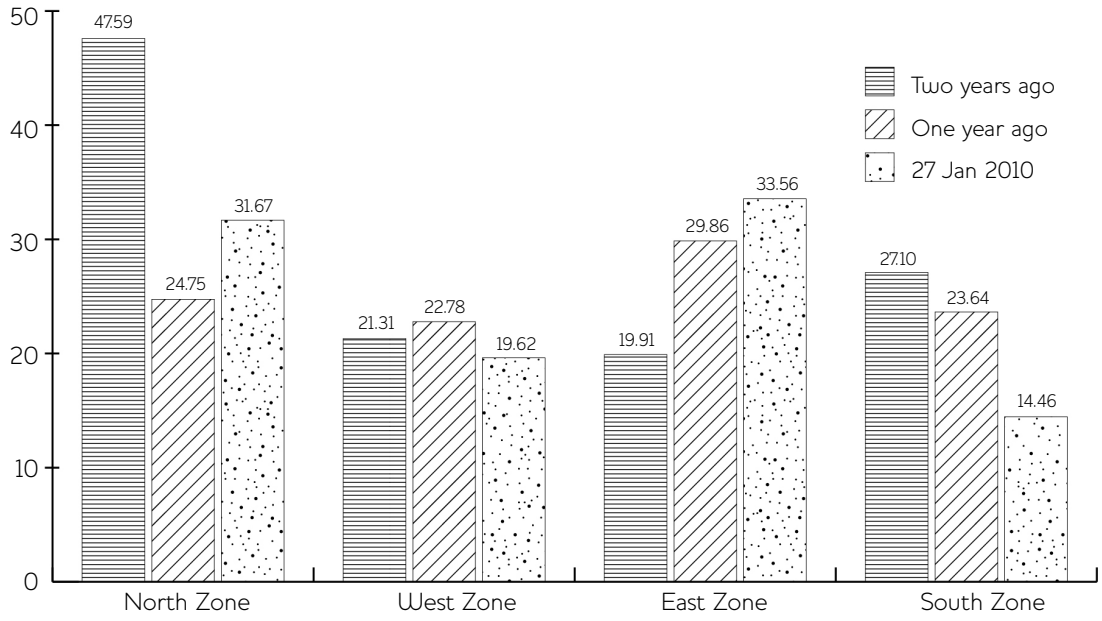
3 Other triggers

This is not to say that such supply–demand imbalances are the only factors responsible for overall inflation. The continuous shift in the commodities on which recent inflation has been focused suggests that other factors – imported inflation, administered price increases, and speculation– have combined to keep high inflation going. Of these factors, the one that has always played an important role is speculation, which partly rides on the uncertainty that demand–supply imbalances create. Large farmers and/or traders acquire and hold back stocks in the expectation that prices would rise. This ensures that such expectations are realised. However, in recent times the transition from older forms of speculation to futures trading has transformed the nature and enhanced the role of speculation. The volume of trade in India's commodity exchanges has risen dramatically. This rapid increase along with signs of inflation in food prices led to the ban on futures trading in wheat, rice *urad* (split black lentils) and *tur* (pigeon pea/red gram) at the end of financial year 2006/07. The government is now under pressure to withdraw that ban.

4 Gainers and losers

In the past, the understanding was that increases in food prices benefited sections in the agricultural sector by shifting the terms of trade in favour of agriculture and the rural areas. Needless to say, not all sections benefited. There have been many analyses of the distribution of marketed surpluses across farmers of different size and class characteristics.[2] They found that the bulk of the marketable surplus was concentrated in the hands of large landholders,

Figure 4 **Retail margins for *atta*/wheat (%)**



Source Government of India, Ministry of Consumer Affairs, Food and Public Distribution, Price Monitoring Cell, http://fcainfoweb.nic.in/pms/Average1_web.aspx (accessed 29 May 2012).

though even small farmers were exposed to the market and were engaged in both selling and buying significant quantities of food. Two factors are responsible for this kind of market engagement. One is that some small farmers sell superior varieties of foodgrains and buy inferior varieties to sustain consumption. The other is that marginal farmers are often required to sell their output at relatively low prices immediately after the harvest to cover cash expenses and commitments, and buy food at higher prices in the lean season.

Given this distribution of the marketed surplus and the tendency towards net purchases of food among smaller farmers it is to be expected that the benefits derived from a rise in food prices would be unevenly distributed across those engaged in agriculture. While large farmers (who most often are also grain traders) would benefit because they produce to sell and market a larger share of their produce, smaller farmers would lose because they are net purchasers of food and tend to sell when prices are low and buy when prices are high. Agricultural workers, like wage workers and fixed-income earners in urban areas, would of course lose. It is only those sections in urban areas whose incomes are linked to prices or who are able to adjust the prices and revenues they receive to cover for the increase in the prices of the food they consume who would be untouched.

5 Trading margins

This is not the only reason why mere distinctions between agriculture and non-agriculture or between rural and urban areas has been found inadequate when assessing the gainers and losers from food price increases. There is also growing separation of the trade from production and a rise in the share of trading margins in the retail price of food. This tendency is reflected in the first instance in a widening of the gap between farm gate and wholesale prices, noticed in individual studies (Agarwal 1986; Kurien 1981). Unfortunately, adequately collated secondary data are not available to assess these trends. But a similar story is evident from the gap between wholesale and retail prices. In rice, for example, by early 2010 the gap between average wholesale and retail prices had widened considerably – even doubled – when analysed over the previous two years across the four major zones of the country, as shown in Figure 3. In wheat (Figure 4), the pattern is more uneven but the retail margins are very large indeed, as expressed by the difference between the wholesale

Table 2 **Share of cereals and pulses in total rural per capita consumption expenditure**

Deciles	1993–94	2004–05	2009–10
1	41.7	35.3	27.0
2	39.5	32.0	25.3
3	37.4	29.3	23.9
4	35.5	27.7	22.9
5	33.1	26.0	22.2
6	31.2	24.0	21.0
7	28.8	22.6	20.2
8	26.5	20.6	18.9
9	23.2	17.9	17.3
10	16.3	11.8	11.8
ALL	**27.8**	**21.5**	**19.0**

Share of all food in total rural per capita consumption expenditure

Deciles	1993–94	2004–05	2009–10
1	67.2	70.5	60.8
2	67.4	67.9	59.7
3	67.1	66.3	58.6
4	66.2	65.7	57.9
5	65.6	64.5	57.5
6	64.8	62.8	56.2
7	63.8	62.2	54.7
8	63.0	60.4	52.6
9	61.3	56.9	50.7
10	53.4	46.0	40.6
ALL	**62.0**	**60.2**	**52.2**

Source National Sample Survey Organisation, *Surveys on Level and Pattern of Consumer Expenditure, 1993–94, 2004–05 and 2009–10.*

price of wheat and the retail price of wheat flour (which is the product of the first stage of processing).

So what exactly is happening? It appears that there are forces that are allowing marketing margins – at both wholesale and retail levels – to increase. This means that the direct producers, the farmers, do not get the benefit of the rising prices that consumers in both rural and urban areas are forced to pay. The factors behind these increasing retail margins need to be studied in much more detail. The role of expectations, especially in the context of a poor monsoon that are bound to (and do) affect the harvest adversely, should not be underplayed. But the tendency has been marked even when production shortfalls are not the source.

It has been argued, convincingly, that increased and more stable food production is the key to food security in the country (Government of India 2006). This is certainly true, and it calls for concerted public action, on the basis of many

Table 3 **Share of cereals and pulses in total urban per capita consumption expenditure**

Deciles	1993–94	2004–05	2009–10
1	33.1	28.2	22.7
2	29.6	23.1	20.0
3	26.4	20.7	19.0
4	24.2	18.7	17.2
5	22.2	16.9	15.8
6	20.2	15.0	14.5
7	18.1	13.2	13.0
8	15.8	11.6	11.3
9	13.2	9.5	9.3
10	8.4	5.7	5.3
ALL	**17.1**	**12.3**	**11.4**

Share of all food in total urban per capita consumption expenditure

Deciles	1993–94	2004–05	2009–10
1	65.2	65.1	57.4
2	64.3	59.7	54.6
3	62.5	57.8	52.6
4	61.1	55.1	50.2
5	60.0	52.5	48.0
6	58.2	50.2	45.8
7	56.5	47.5	43.3
8	54.5	44.9	40.1
9	51.2	41.0	36.5
10	43.4	30.8	26.1
ALL	**53.9**	**44.2**	**39.2**

Source National Sample Survey Organisation, *Surveys on Level and Pattern of Consumer Expenditure, 1993–94, 2004–05 and 2009–10.*

recommendations that have already been made by the National Commission on Farmers and others. But another very important element is food distribution. An efficiently functioning and widespread public system for distributing essential food items is important to prevent retail margins from rising. A properly funded, efficient and accountable system of public delivery of food items through a network of fair price shops and cooperatives is the best and most cost-effective way of limiting increases in food prices and ensuring that every citizen has access to enough food. India needs to strengthen its Public Distribution System (PDS) and create such a system.

6 Impact on the consumer

It is a truism to state that a consumer *qua* consumer would be adversely affected by any increase in food prices. However, different consumers (rich and poor) would be affected differentially. As Tables 2 (rural) and 3 (urban)

Table 4 **Real MPCE in 1993–94 prices**

		Rural	
Decile	**1993–94**	**2004–05**	**2009–10**
1	126.2	142.52	163.05
2	165.91	183.51	206.20
3	190.73	210.43	234.42
4	213.6	236.30	261.77
5	237.7	263.06	288.53
6	264.3	292.57	317.27
7	295.37	329.03	352.91
8	335.02	377.78	401.75
9	398.63	459.66	480.92
10	638.37	803.07	794.41
ALL	**286.58**	**329.79**	**350.18**
		Urban	
Decile	**1993–94**	**2004–05**	**2009–10**
1	166.67	173.17	202.66
2	227.12	234.94	273.24
3	269.52	283.09	327.04
4	309.69	331.78	382.08
5	354.06	386.25	445.38
6	403.88	452.97	522.25
7	467.31	537.42	618.61
8	557.44	650.32	748.44
9	701.87	847.91	962.08
10	1190.66	1582.51	1866.39
ALL	**464.83**	**548.05**	**635.08**

Source National Sample Survey Organisation, *Surveys on Level and Pattern of Consumer Expenditure, 1993–94, 2004–05 and 2009–10* and Labour Bureau, Shimla for Price Indices.

show, across the three National Sample Surveys on consumer expenditure patterns relating to 1993–94, 2004–05 and 2009–10 (based on the mixed reference period), the share of total monthly per capita expenditures devoted to cereals and pulses falls quite sharply as we move from the lowest to the highest per capita expenditure deciles. The decline in the case of all food articles is (as expected) less sharp, though the decline here too is significant. This points to the well-known fact that food expenditures (especially that on staples) constitute a much larger proportion of total expenditure in the case of the poor. Thus food price inflation, as noted earlier, would substantially erode their real expenditures and therefore their access to nutrition.

However, there is a larger issue involved here. As Table 4 shows, both in rural and urban areas real monthly per capita expenditure (computed by deflating nominal values by the consumer price indices for agricultural labourers and industrial workers respectively) has risen across these three years in all expenditure deciles. Yet the evidence from consumer expenditure surveys shows that consumption of cereals and pulses and of all food articles has declined in real value or stagnated across time periods in some of the poorer expenditure groups. This is partly reflective of the fact that loss of access to common property resources or the need to rely on privately delivered services (for health and education) has necessitated the diversion of a larger amount of expenditure to these items, adversely affecting the consumption of food by the poor. In other words, as and when it occurs, the adverse effect of food price inflation would be felt on top of this underlying trend, with damaging impacts on the poor who are already under severe strain.

Thus, it is not surprising that questions of food security and the right to food have become such urgent political and social issues in India today. Rapid aggregate income growth over the past two decades has not addressed the basic issue of ensuring the food security of the population. Instead, nutrition indicators have stagnated and per capita calorie consumption has actually declined, suggesting that the problem of hunger may have got worse rather than better.

A substantial part of this crisis is driven by the increasing levels of food prices, and to a lesser extent, increases in food price volatility. The Government of India needs to be much more focused on doing whatever it can to lower the price of food and stabilise it, especially for the benefit of the poorest in society.

Notes

1 Figures based on data from the Central Statistical Organization's *National Accounts Statistics* and the *Survey on Employment and Unemployment* of the National Sample Survey Organization, India.

2 See literature review in chapter 3 of Upender 1990.

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